



UM01531.ST25.txt
SEQUENCE LISTING

<110> Hale, Calvin C

Price, Elmer M

<120> LARGE SCALE EXPRESSION AND PURIFICATION OF RECOMBINANT PROTEINS

<130> UMO 1531.1

<140> US 09/901,419

<141> 2001-07-09

<160> 5

<170> PatentIn version 3.1

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<211> 4087

<212> DNA

<213> Bos taurus

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<221> CDS

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<221> sig_peptide

<222> (268)..(363)

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<221> misc_feature

<222> (3178)..()

<223> A Poly (H) affinity tag comprising 6 His residues have been inserted at the C-Terminus end of the coding region of the protein

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 acagttggaa ctctgccatt gcccagc atg ctg cag ttc agt ctg tca ccc acc 240
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gtc gtc ccg gat ggg gag aca agg aag atc aag cat ctg cgt gtg ttc	870
Val Val Pro Asp Gly Glu Thr Arg Lys Ile Lys His Leu Arg Val Phe	
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Phe Val Thr Ala Ala Trp Ser Ile Phe Ala Tyr Thr Trp Leu Tyr Ile	
205 210 215	
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Ile Leu Ser Val Ser Ser Pro Gly Val Val Glu Val Trp Glu Gly Leu	
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Leu Thr Phe Phe Phe Pro Ile Cys Val Val Phe Ala Trp Val Ala	
235 240 245	
gac agg agg ctt ctg ttt tac aag tat gtc tac aag agg tat cgg gct	1062
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Gly Lys Gln Arg Gly Met Ile Ile Glu His Glu Gly Asp Arg Pro Ser	
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Gln Asp Asp Glu Glu Ala Arg Arg Glu Met Ala Arg Ile Leu Lys Glu	
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agg cat gca gca gac caa gcc agg aaa gct gtc agc atg cat gag gtc	1446
Arg His Ala Ala Asp Gln Ala Arg Lys Ala Val Ser Met His Glu Val	
380 385 390	
aac acg gaa gtg gct gaa aat gac cct gtc agt aag atc ttc ttt gaa	1494
Asn Thr Glu Val Ala Glu Asn Asp Pro Val Ser Lys Ile Phe Phe Glu	
395 400 405	
caa ggg aca tat cag tgt ctg gag aac tgt ggc aca gta gcc ctg acc	1542
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tcc act gcc acc gtg act att ttt gat gat gac cat gct ggc atc ttt Ser Thr Ala Thr Val Thr Ile Phe Asp Asp Asp His Ala Gly Ile Phe 525 530 535	1878
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670

675

680

2358

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2406

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 700 705 710

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2550

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2598

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 780 785 790

2694

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 795 800 805

2742

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2790

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 Ile Ala Leu Lys Asp Ser Val Thr Ala Val Val Phe Val Ala Leu Gly
 830 835 840

2838

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 Thr Ser Val Pro Asp Thr Phe Ala Ser Lys Val Ala Ala Thr Gln Asp
 845 850 855

2886

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2934

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2982

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3030

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3078

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Phe															
970															
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<212> PRT

<213> Bos taurus

<220>

<221> misc_feature

<222> (3178)..()

<223> A Poly (H) affinity tag comprising 6 His residues have been inser

ted at the C-Terminus end of the coding region of the protein

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Ile Ala Met Val Ala Leu Leu Phe Ser His Val Asp His Ile Ser Ala
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35 40 45

Ser Tyr Tyr Cys Lys Lys Gly Val Ile Leu Pro Ile Trp Glu Pro Gln
50 55 60

Asp Pro Ser Phe Gly Asp Lys Ile Ala Arg Ala Thr Val Tyr Phe Val
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Ala Met Val Tyr Met Phe Leu Gly Val Ser Ile Ile Ala Asp Arg Phe
85 90 95

Met Ser Ser Ile Glu Val Ile Thr Ser Gln Glu Lys Glu Ile Thr Ile
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Lys Lys Pro Asn Gly Glu Thr Thr Lys Thr Thr Val Arg Ile Trp Asn
115 120 125

Glu Thr Val Ser Asn Leu Thr Leu Met Ala Leu Gly Ser Ser Ala Pro
130 135 140

Glu Ile Leu Leu Ser Val Ile Glu Val Cys Gly His Asn Phe Thr Ala
145 150 155 160

Gly Asp Leu Gly Pro Ser Thr Ile Val Gly Ser Ala Ala Phe Asn Met
165 170 175

Phe Ile Ile Ile Ala Leu Cys Val Tyr Val Val Pro Asp Gly Glu Thr
180 185 190

Arg Lys Ile Lys His Leu Arg Val Phe Phe Val Thr Ala Ala Trp Ser
195 200 205

Ile Phe Ala Tyr Thr Trp Leu Tyr Ile Ile Leu Ser Val Ser Ser Pro
210 215 220

Gly Val Val Glu Val Trp Glu Gly Leu Leu Thr Phe Phe Phe Pro
225 230 235 240

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245 250 255

Lys Tyr Val Tyr Lys Arg Tyr Arg Ala Gly Lys Gln Arg Gly Met Ile
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Ile Glu His Glu Gly Asp Arg Pro Ser Ser Lys Thr Glu Ile Glu Met
275 280 285

Asp Gly Lys Val Val Asn Ser His Val Asp Ser Phe Leu Asp Gly Ala
290 295 300

Leu Val Leu Glu Val Asp Glu Arg Asp Gln Asp Asp Glu Glu Ala Arg
305 310 315 320

Arg Glu Met Ala Arg Ile Leu Lys Glu Leu Lys Gln Lys His Pro Glu
325 330 335

Lys Glu Ile Glu Gln Leu Ile Glu Leu Ala Asn Tyr Gln Val Leu Ser
340 345 350

Gln Gln Gln Lys Ser Arg Ala Phe Tyr Arg Ile Gln Ala Thr Arg Leu
355 360 365

Met Thr Gly Ala Gly Asn Ile Leu Lys Arg His Ala Ala Asp Gln Ala
370 375 380

Arg Lys Ala Val Ser Met His Glu Val Asn Thr Glu Val Ala Glu Asn
385 390 395 400

Asp Pro Val Ser Lys Ile Phe Phe Glu Gln Gly Thr Tyr Gln Cys Leu
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Glu Asn Cys Gly Thr Val Ala Leu Thr Ile Ile Arg Arg Gly Gly Asp
420 425 430

Leu Thr Asn Thr Val Phe Val Asp Phe Arg Thr Glu Asp Gly Thr Ala
435 440 445

Asn Ala Gly Ser Asp Tyr Glu Phe Thr Glu Gly Thr Val Val Phe Lys
450 455 460

Pro Gly Glu Thr Gln Lys Glu Ile Arg Val Gly Ile Ile Asp Asp Asp
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Ile Phe Glu Glu Asp Glu Asn Phe Leu Val His Leu Ser Asn Val Lys
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Ser Thr Leu Ala Cys Leu Gly Ser Pro Ser Thr Ala Thr Val Thr Ile
515 520 525

Phe Asp Asp Asp His Ala Gly Ile Phe Thr Phe Glu Glu Pro Val Thr
530 535 540

His Val Ser Glu Ser Ile Gly Ile Met Glu Val Lys Val Leu Arg Thr
545 550 555 560

Ser Gly Ala Arg Gly Asn Val Ile Val Pro Tyr Lys Thr Ile Glu Gly
565 570 575

Thr Ala Arg Gly Gly Glu Asp Phe Glu Asp Thr Cys Gly Glu Leu
580 585 590

Glu Phe Gln Asn Asp Glu Ile Val Lys Thr Ile Ser Val Lys Val Ile
595 600 605

Asp Asp Glu Glu Tyr Glu Lys Asn Lys Thr Phe Phe Leu Glu Ile Gly
610 615 620

C3
cont Glu Pro Arg Leu Val Glu Met Ser Glu Lys Lys Ala Leu Leu Leu Asn
625 630 635 640

Glu Leu Gly Gly Phe Thr Ile Thr Gly Lys Tyr Leu Tyr Gly Gln Pro
645 650 655

Val Phe Arg Lys Val His Ala Arg Glu His Pro Leu Pro Ser Thr Ile
660 665 670

Ile Thr Ile Ala Asp Glu Tyr Asp Asp Lys Gln Pro Leu Thr Ser Lys
675 680 685

Glu Glu Glu Glu Arg Arg Ile Ala Glu Met Gly Arg Pro Ile Leu Gly
690 695 700

Glu His Thr Arg Leu Glu Val Ile Ile Glu Glu Ser Tyr Glu Phe Lys
705 710 715 720

Ser Thr Val Asp Lys Leu Ile Lys Lys Thr Asn Leu Ala Leu Val Val
725 730 735

Gly Thr Asn Ser Trp Arg Glu Gln Phe Ile Glu Ala Ile Thr Val Ser
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UMO1531.ST25.txt
740 745 750

Ala Gly Glu Asp Asp Asp Asp Asp Glu Cys Gly Glu Glu Lys Leu Pro
755 760 765

Ser Cys Phe Asp Tyr Val Met His Phe Leu Thr Val Phe Trp Lys Val
770 775 780

Leu Phe Ala Phe Val Pro Pro Thr Glu Tyr Trp Asn Gly Trp Ala Cys
785 790 795 800

Phe Ile Val Ser Ile Leu Met Ile Gly Leu Leu Thr Ala Phe Ile Gly
805 810 815

Asp Leu Ala Ser His Phe Ala Cys Thr Ile Ala Leu Lys Asp Ser Val
820 825 830

Thr Ala Val Val Phe Val Ala Leu Gly Thr Ser Val Pro Asp Thr Phe
835 840 845

Ala Ser Lys Val Ala Ala Thr Gln Asp Gln Tyr Ala Asp Ala Ser Ile
850 855 860

Gly Asn Val Thr Gly Ser Asn Ala Val Asn Val Phe Leu Gly Ile Gly
865 870 875 880

Val Ala Trp Ser Ile Ala Ala Ile Tyr His Ala Ala Asn Gly Glu Gln
885 890 895

Phe Lys Val Ser Pro Gly Thr Leu Ala Phe Ser Val Thr Leu Phe Thr
900 905 910

Ile Phe Ala Phe Ile Asn Val Gly Val Leu Leu Tyr Arg Arg Arg Pro
915 920 925

Glu Ile Gly Gly Glu Leu Gly Gly Pro Arg Thr Ala Lys Leu Leu Thr
930 935 940

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Leu Glu Ala Tyr Cys His Ile Lys Gly Phe
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UMO1531.ST25.txt

<212> PRT

<213> Bos taurus

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Ile Ala Met Val Ala Leu Leu Phe Ser His Val Asp His Ile Ser Ala
20 25 30

Glu Thr Glu Met Glu Gly Glu Gly Asn Glu Thr Gly Glu Cys Thr Gly
35 40 45

Ser Tyr Tyr Cys Lys Lys Gly Val Ile Leu Pro Ile Trp Glu Pro Gln
50 55 60

Asp Pro Ser Phe Gly Asp Lys Ile Ala Arg Ala Thr Val Tyr Phe Val
65 70 75 80

Ala Met Val Tyr Met Phe Leu Gly Val Ser Ile Ile Ala Asp Arg Phe
85 90 95

Met Ser Ser Ile Glu Val Ile Thr Ser Gln Glu Lys Glu Ile Thr Ile
100 105 110

Lys Lys Pro Asn Gly Glu Thr Thr Lys Thr Thr Val Arg Ile Trp Asn
115 120 125

Glu Thr Val Ser Asn Leu Thr Leu Met Ala Leu Gly Ser Ser Ala Pro
130 135 140

Glu Ile Leu Leu Ser Val Ile Glu Val Cys Gly His Asn Phe Thr Ala
145 150 155 160

Gly Asp Leu Gly Pro Ser Thr Ile Val Gly Ser Ala Ala Phe Asn Met
165 170 175

Phe Ile Ile Ile Ala Leu Cys Val Tyr Val Val Pro Asp Gly Glu Thr
180 185 190

Arg Lys Ile Lys His Leu Arg Val Phe Phe Val Thr Ala Ala Trp Ser
195 200 205

Ile Phe Ala Tyr Thr Trp Leu Tyr Ile Ile Leu Ser Val Ser Ser Pro
210 215 220

UM01531.ST25.txt

Gly Val Val Glu Val Trp Glu Gly Leu Leu Thr Phe Phe Phe Phe Pro
225 230 235 240

Ile Cys Val Val Phe Ala Trp Val Ala Asp Arg Arg Leu Leu Phe Tyr
245 250 255

Lys Tyr Val Tyr Lys Arg Tyr Arg Ala Gly Lys Gln Arg Gly Met Ile
260 265 270

Ile Glu His Glu Gly Asp Arg Pro Ser Ser Lys Thr Glu Ile Glu Met
275 280 285

Asp Gly Lys Val Val Asn Ser His Val Asp Ser Phe Leu Asp Gly Ala
290 295 300

Leu Val Leu Glu Val Asp Glu Arg Asp Gln Asp Asp Glu Glu Ala Arg
305 310 315 320

Arg Glu Met Ala Arg Ile Leu Lys Glu Leu Lys Gln Lys His Pro Glu
325 330 335

Lys Glu Ile Glu Gln Leu Ile Glu Leu Ala Asn Tyr Gln Val Leu Ser
340 345 350

Gln Gln Gln Lys Ser Arg Ala Phe Tyr Arg Ile Gln Ala Thr Arg Leu
355 360 365

Met Thr Gly Ala Gly Asn Ile Leu Lys Arg His Ala Ala Asp Gln Ala
370 375 380

Arg Lys Ala Val Ser Met His Glu Val Asn Thr Glu Val Ala Glu Asn
385 390 395 400

Asp Pro Val Ser Lys Ile Phe Phe Glu Gln Gly Thr Tyr Gln Cys Leu
405 410 415

Glu Asn Cys Gly Thr Val Ala Leu Thr Ile Ile Arg Arg Gly Gly Asp
420 425 430

Leu Thr Asn Thr Val Phe Val Asp Phe Arg Thr Glu Asp Gly Thr Ala
435 440 445

Asn Ala Gly Ser Asp Tyr Glu Phe Thr Glu Gly Thr Val Val Phe Lys
450 455 460

Pro Gly Glu Thr Gln Lys Glu Ile Arg Val Gly Ile Ile Asp Asp Asp
465 470 475 480

UMO1531.ST25.txt

Ile Phe Glu Glu Asp Glu Asn Phe Leu Val His Leu Ser Asn Val Lys
485 490 495

Val Ser Leu Glu Ala Ser Glu Asp Gly Ile Leu Glu Ala Ser His Val
500 505 510

Ser Thr Leu Ala Cys Leu Gly Ser Pro Ser Thr Ala Thr Val Thr Ile
515 520 525

Phe Asp Asp Asp His Ala Gly Ile Phe Thr Phe Glu Glu Pro Val Thr
530 535 540

His Val Ser Glu Ser Ile Gly Ile Met Glu Val Lys Val Leu Arg Thr
545 550 555 560

Ser Gly Ala Arg Gly Asn Val Ile Val Pro Tyr Lys Thr Ile Glu Gly
565 570 575

Thr Ala Arg Gly Gly Glu Asp Phe Glu Asp Thr Cys Gly Glu Leu
580 585 590

Glu Phe Gln Asn Asp Glu Ile Val Lys Thr Ile Ser Val Lys Val Ile
595 600 605

Asp Asp Glu Glu Tyr Glu Lys Asn Lys Thr Phe Phe Leu Glu Ile Gly
610 615 620

Glu Pro Arg Leu Val Glu Met Ser Glu Lys Lys Ala Leu Leu Leu Asn
625 630 635 640

Glu Leu Gly Gly Phe Thr Ile Thr Gly Lys Tyr Leu Tyr Gly Gln Pro
645 650 655

Val Phe Arg Lys Val His Ala Arg Glu His Pro Leu Pro Ser Thr Ile
660 665 670

Ile Thr Ile Ala Asp Glu Tyr Asp Asp Lys Gln Pro Leu Thr Ser Lys
675 680 685

Glu Glu Glu Glu Arg Arg Ile Ala Glu Met Gly Arg Pro Ile Leu Gly
690 695 700

Glu His Thr Arg Leu Glu Val Ile Ile Glu Glu Ser Tyr Glu Phe Lys
705 710 715 720

Ser Thr Val Asp Lys Leu Ile Lys Lys Thr Asn Leu Ala Leu Val Val
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Gly Thr Asn Ser Trp Arg Glu Gln Phe Ile Glu Ala Ile Thr Val Ser
 740 745 750

Ala Gly Glu Asp Asp Asp Asp Glu Cys Gly Glu Glu Lys Leu Pro
 755 760 765

Ser Cys Phe Asp Tyr Val Met His Phe Leu Thr Val Phe Trp Lys Val
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Leu Phe Ala Phe Val Pro Pro Thr Glu Tyr Trp Asn Gly Trp Ala Cys
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Phe Ile Val Ser Ile Leu Met Ile Gly Leu Leu Thr Ala Phe Ile Gly
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Asp Leu Ala Ser His Phe Ala Cys Thr Ile Ala Leu Lys Asp Ser Val
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Thr Ala Val Val Phe Val Ala Leu Gly Thr Ser Val Pro Asp Thr Phe
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Ala Ser Lys Val Ala Ala Thr Gln Asp Gln Tyr Ala Asp Ala Ser Ile
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Gly Asn Val Thr Gly Ser Asn Ala Val Asn Val Phe Leu Gly Ile Gly
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Val Ala Trp Ser Ile Ala Ala Ile Tyr His Ala Ala Asn Gly Glu Gln
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Phe Lys Val Ser Pro Gly Thr Leu Ala Phe Ser Val Thr Leu Phe Thr
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Ile Phe Ala Phe Ile Asn Val Gly Val Leu Leu Tyr Arg Arg Arg Pro
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Glu Ile Gly Gly Glu Leu Gly Gly Pro Arg Thr Ala Lys Leu Leu Thr
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Ser Cys Leu Phe Val Leu Leu Trp Leu Leu Tyr Ile Phe Phe Ser Ser
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